

invoking one of an optimization engine, an inference engine, and a constraint satisfaction engine to interpret the model, the model including one of a rule base model, an optimization model, and a constraint model;

wherein the interpretation of the model can include one of an infer action, a search with constraints action, an interact action, an optimize action, and a decide action.

10. A method for executing an interaction flow model as recited in claim 9, wherein the interpretation of the rule base model includes executing the inference engine to act upon the rule base model and produce a number of constraints.

11. A method for executing an interaction flow model as recited in claim 10, wherein the number of constraints are communicated to the constraint satisfaction engine, the constraint satisfaction engine being configured to search for a set of objects that match the number of constraints as well as constraints of the constraint model.

12. A method for executing an interaction flow model as recited in claim 11, wherein the set of objects are communicated to the optimization engine, the optimization engine communicating with the optimization model so as to produce an optimized object that is recorded, the recording of the optimized object being indicative of the handling of the identified situation.

13. An information system, comprising:

a user and application interface;

a reasoning engine in communication with the user and application interface;

a knowledge manager in communication with the user and application interface and interfaced with the reasoning engine; and

a distributed information service in communication with the reasoning engine, the knowledge manager, and the user and application interface;

wherein the reasoning engine is configured to work in conjunction with the knowledge manager so as to enable the reasoning engine to handle events by executing one or more specific tasks prescribed by the knowledge manager to handle the events most appropriately.

14. An information system as recited in claim 13, wherein the knowledge manager includes an interaction flow model that is a repository for abstract situations to handle the events received by the reasoning engine, the situations defining the one or more tasks that are to be executed by the reasoning engine.

15. An information system as recited in claim 14, wherein the reasoning engine includes an interaction flow engine that is configured to receive the events, to invoke a categorization engine to categorize the events, and to interface with the interaction flow model of the knowledge manager.

16. An information system as recited in claim 15, wherein the interaction flow engine is configured to process through the one or more tasks by invoking at least one of an inference engine, a constraint satisfaction engine, an optimization engine, and an external application.

17. An information system as recited in claim 16, wherein the inference engine of the reasoning engine executes the event in conjunction with rules obtained from a rule base model of the knowledge manager to generate a number of constraints that are communicated to the interaction flow engine of the reasoning engine.

18. An information system as recited in claim 16, wherein the constraint satisfaction engine executes at least one of each of constraints received from the interaction flow engine and constraints obtained from the constraint model, the constraint satisfaction engine being configured to produce a set of solutions.

19. An information system as recited in claim 16, wherein the optimization engine is configured to receive the set of solutions from the interaction flow engine and optimization model data to generate an optimized solution, the optimized solution being communicated to the distribution information service.

20. An information system as recited in claim 19, wherein the optimized solution is recorded.

21. An information system as recited in claim 13, wherein the reasoning engine includes:

- an interaction flow engine;
- an inference engine;
- a constraint satisfaction engine;
- an optimization engine;

a rule base model;
a constraint model;
an optimization model;
a conceptual model;
a predictive model; and
an ontology.

26. An information system as recited in claim 25, wherein each of the interactive flow model and the ontology is in communication with the rule base model, the constraint model, and the optimization model, wherein the interactive flow model is configured to manage interaction flows with each of the rule base model, the constraint model, and the optimization model, and wherein interaction flows include a number of situations and each situation has a context description that contains event concepts that a situation of the number of situations requires to occur.

27. An information system as recited in claim 26, wherein the interaction flow model is configured to be compiled for execution by the interaction flow engine.

28. An information system as recited in claim 27, wherein the ontology defines a meaning of terms used by the interaction flow model.

29. An information system, comprising:



a reasoning engine configured to derive a set of conclusions using a set of premises and to execute actions that are attached to the set of conclusions, wherein a plurality of models encode the set of premises; and

a knowledge manager, the knowledge manager being a repository of the plurality of models, each of the plurality of models defining situations that occur in decision making to achieve a goal state, and the knowledge manager including an ontology to provide consistency between the plurality of models.

30. An information system as recited in claim 29, further comprising:

a distributed information service in communication with each of the reasoning engine and the knowledge manager, the distributed information service being configured to provide a link to external modules and external applications to the reasoning engine and the knowledge manager without requiring direct access to disparate information sources handled by the reasoning engine and the knowledge manager.

31. An information system as recited in claim 30, wherein each of the disparate information sources is accessed using a uniform resource identifier (URI), which is a logical name that hides a location and an access protocol of each of the disparate information sources.

32. An information system as recited in claim 30, further comprising:

a user and application interface in communication with the distributed information service, the knowledge manager, and the reasoning engine, the user and application interface being configured to provide an interface to external actors, wherein external actors include one of human users and applications.

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33. An information system as recited in claim 32, wherein the user and application interface includes a system administration interface, an application deployment interface, a business modeling interface, an application object system, and a delivery channel interface.

34. An information system as recited in claim 30, wherein the distributed information service includes a data model, a query service, a naming service, a storage system, a schema manager, and a mapping service.

35. An information system as recited in claim 34, wherein the storage system includes resource adapters.

36. A computer readable media having program instructions for executing an interaction flow model, comprising:

program instructions for receiving an event;

program instructions for categorizing the received event;

program instructions for identifying a situation that matches the categorized received event; and

program instructions for executing one or more tasks for the situation, the execution of the one or more tasks including one of an interpretation of a model and execution of a method of an object.

008180-00221950

